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ABSTRACT

This study of 134 mothers and their newborn infants evaluated the relationships between neonatal style and mother-infant interaction. The procedure included a newborn assessment with the Brazelton Neonatal Assessment Scale and two mother-infant interaction observations, one carried out during feeding and the other during a semi-structured situation. The results indicated that there were consistent relationships between infant and maternal behaviors; more alert and responsive infants have more responsive and sensitive mothers. These consistencies were found for both infants and mothers across the different situations. Possible directional interpretations of the findings were proposed. (Author/GO)

Neonatal Characteristics and Directional Effects in Mother-Infant Interaction

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Abstract

One hundred thirty-four mothers and their newborn infants were studied in order to evaluate the relationships between neonatal style and mother-infant interaction. The procedure included a newborn assessment with the Brazelton Neonatal Assessment Scale, and two mother-infant interaction observations, one carried out during feeding and the other during a semi-structured situation. The results indicated that there were consistent relationships between infant and maternal behaviors; more alert and responsive infants have more responsive and sensitive mothers. These consistencies were found for both infants and mothers across the different situations. Possible directional interpretations of the findings were proposed.

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With the recent shift in focus in parent-child interaction research from an emphasis on the parents' contribution, to concern with gaining a better understanding of the interactional process, the child's relative contribution has become of more interest (Bell, 1968; 1974). Observational studies including different parent-child interaction situations as well as independent assessments of both the parent and child have provided data pertinent to these issues. Theoretical and empirical research focusing on the infant include studies of individual differences (Korner, 1973; Wolff, 1966; Ashton, 1973; Escalona, 1968) and infant temperament and style (Thomas, Chess, Birch, Hertig & Korn, 1964; Rutter, 1970; Carey, 1970; 1973). A major concern of these investigators has been the effect of infant state and temperament on other behavioral measures or on the interactive process. Some recent work utilizing neonatal assessments has provided a means of studying other possible variations in infant style (Brazelton, 1973; Osofsky & Danzger, 1974; Brazelton, Note 1; Horowitz, Note 2; Osofsky and O'Connell, Note 3). Parents' behaviors have been measured utilizing both observations and interviews which have included general and specific questions about childrearing. The observational studies have attempted to define the parents' contribution to the interactive process. In several recent studies of parental childrearing attitudes, factor analyses of the individual items

have been carried out yielding more specific and possibly predictive clusters (Duchowny, Note 4; Parke, Note 5; Osofsky, Note 6).

In studies of parent-infant relationships, it has been found that age, sex (Lewis, 1972; Moss, 1967), social class (Lewis & Wilson, 1972; Tulkin & Kagan, 1972) and parity (Thoman, Turner, Leiderman & Barnett, 1970) may affect the patterns of parent-child interaction. In addition, both mothers' and fathers' behaviors are affected during the parent-infant interaction situation by the presence of each other (Ban & Lewis, 1974; Kotelchuck, Note 7; Parke, Note 8; Pedersen, Note 9). However, few studies have investigated the relationships between newborn style and the early parent-infant relationship.

The purpose of the present study was to investigate the relationships between early mother-infant interaction and newborn style in two different observational situations. Consistencies and inconsistencies in observed newborn behavior were studied across situations and in relation to the newborn behavioral assessment measure. Maternal consistency and inconsistency was evaluated in the two situations.

Method

Subjects

The subjects were 134 mothers and their newborn infants randomly sampled from the population born at Temple University Hospital in Philadelphia between September 1973 and June 1974. All subjects were non-white and of lower socioeconomic status. The infants were between 2 and 4 days old when included in the study. The sample included 73 boys and 61 girls; 59 percent of the infants were first-borns. Mothers ranged in age from 13 to 37 ($\bar{x}$ = 19.90).

Procedure

Following a strategy used successfully in an earlier study, the mothers were approached while they were in the hospital and asked if they would be willing to participate in a study about mothers and their infants. The mothers were told that they would be observed with their infants on two separate occasions, one time during feeding and the other at a convenient time for them and the baby. Following the observations they were told that they would be asked some questions about their family and childrearing attitudes. The mothers were informed that their infants would be evaluated developmentally. After they agreed to participate, convenient times were arranged to carry out the procedures during their four-day hospital stay. It was considered essential that the interviewers and observers be attentive to the mothers' and infants' needs and that they develop rapport with the mothers to optimize cooperation. The experimenters were two young white women who worked as supportive staff in the hospital. Only three mothers who were approached refused to participate in the project.

Behavioral Observations

The first behavioral observation took place for about 15 minutes during a scheduled feeding time. All mothers were bottle feeding. (Few women in the hospital breastfed their infants; therefore those who were breastfeeding were eliminated from the sample since it would not have been possible to obtain a sufficient number for comparison purposes.) A description of the feeding observation and the maternal and infant rating scales has been reported in a previous publication (Osofsky & Danzger, 1974).

A second behavioral observation, called the "stimulation" situation, also took place for about 15 minutes at a time period between 1½ and 2 hours after the scheduled feeding. This time interval was chosen because it seems to be an optimal period for obtaining responses from a newborn in an alert, awake state as compared with a crying or sleepy state (Brazelton, 1973). For this observation the infants were awakened by the experimenter, if they were not already awake, and given to their mothers. The mothers were then asked to present various stimuli to their infants, directed generally as to how they might do it, and observed during the interaction. The following tasks, adapted from items on the Brazelton Neonatal Assessment Scale (Brazelton, 1973), were performed by the mothers in interaction with their infants. The tasks were designed to be as similar as possible to those used during the Brazelton assessment in order to minimize the behavioral differences due to the use of different methods. Similar infant and maternal behaviors were also rated for both observational situations. Maternal behaviors and infant responses during the stimulation situation were rated separately for each of the tasks.[1]

1. Inanimate auditory stimulus (rattle): The mother was asked to shake a rattle on the side of her infant's head.
2. Inanimate visual stimulus (ball): The mother was asked to move a red ball in front of her infant's face.

[1] Descriptive and coding manuals for rating maternal and infant behaviors on these tasks are available from the author.

3. Animate auditory stimulus (voice): The mother was asked to talk to her infant on the side of his/her head.

4. Animate visual stimulus (face): The mother was asked to look at her infant's face and to move her head back and forth in front of him/her.

5. Animate auditory and visual stimulus (face and voice): The mother was asked to look at her infant, talk to him/her and move her head back and forth in front of him/her all at the same time.

6. Cuddliness: The mother was asked to pick up her infant and hold or cuddle him/her.

Individual measures of maternal behaviors were rated for each situation. Following the individual ratings, an overall assessment was made of the mother's general sensitivity combining her technique and persistence over all of the situations. Infant state was rated at the beginning of each task and infant behavioral responses were rated separately for each task situation. Inter-rater reliabilities for the stimulation situation ranged from .75 to .97 ($\bar{x}$ = .86).

Neonatal Evaluations

Infants were evaluated between two and four days of age using the Brazelton Neonatal Behavioral Assessment Scale (Brazelton, 1973; Osofsky & Danzger, 1974; Horowitz et al, Note 2). After training, inter-rater reliability for the testers on the Brazelton items ranged from .89 to .99.

Results

The results will be presented in terms of the replication of pre-

vious findings, relationships among behaviors, and possible directional interpretations of the data. Only significant findings are included in the tables. Demographic data for a smaller sample drawn from the same population have been reported in a previous study (Osofsky & Danzger, 1974) and are essentially the same for the current sample; therefore this information will not be presented.

Perinatal Characteristics and Neonatal Assessment Measures

Primiparous mothers (having their first baby) had longer labors ($r = .30$, $p < .01$), but multiparous mothers received more medication and anaesthesia during labor and delivery ($r = .28$, $p < .01$). Mothers having longer labors had newborns who exhibited less self-quieting behavior ($r = .21$, $p < .01$) and hand-to-mouth activity ($r = -.23$, $p < .01$), more startles ($r = .17$, $p < .05$) and higher rapidity of buildup ($r = .20$, $p < .05$). Newborns with higher 5 minute Apgar scores generally scored higher on individual items clustering to form the Reactivity factor of the Brazelton Neonatal Assessment Scale (Horowitz, Note 2; Osofsky & O'Connell, Note 3), including peak of excitement ($r = .25$, $p < .01$), rapidity of buildup ($r = .17$, $p < .05$) and activity ($r = .17$, $p < .05$). These newborns were also higher on self-quieting activity ($r = .17$, $p < .05$). During the feeding situation, they looked at their mothers more and responded more to auditory stimulation.

There were only two sex differences for the neonatal assessments or observational data; females were more cuddly and males had a higher state for the presentation of 2 of the 5 stimuli during the stimulation observation. In terms of birth order differences, first-born infants generally had lower states ($r = .22$, $p < .05$), took longer to habituate

to the inanimate auditory stimulus ($r = -.21$, $p < .05$) and the pinprick ($r = -.20$, $p < .05$) and had a lower peak of excitement ($r = .19$, $p < .05$). These few sex and birth order differences were the only ones noted in the current study.

Neonatal Characteristics and Mother-Infant Interaction during Feeding: Replication of Previous Findings

In an earlier study (Osofsky & Danzger, 1974), data was reported indicating that there are consistencies in infant state and behavioral measures across situations as well as consistent and interactive relationships between patterns of maternal and infant behaviors in corresponding areas when observed during feeding. The portions of this study that were designed to replicate the earlier findings essentially accomplished this objective. The infants who were alert and responsive during the Brazelton assessment were also responsive during the feeding observation and had mothers who presented more visual, auditory and tactile stimulation to them.

Neonatal Characteristics and Mother-Infant Interaction during Feeding and Stimulation Situations

The relationships among mothers and infants' behaviors during the stimulation and the feeding situations and the infants' behaviors during the neonatal assessment provide further information about behavioral consistencies and inconsistencies. Because data from the stimulation situation has not been reported previously, means and standard deviations for maternal behaviors are presented in Table 1 and those for infant behaviors are presented in Table 2.

Table 3 presents the relationships between infant behavior during

the stimulation situation and relevant items on the Brazelton Neonatal Assessment Scale. A number of interesting relationships were noted. Infant state during the stimulation situation related consistently to all of the orientation items on the Brazelton scale as well as to alertness. These items have been previously found to cluster into the Responsivity factor (Horowitz et al, Note 2; Osofsky & O'Connell, Note 3). Infant responsivity to all of the other stimulus items from the stimulation situation also related to the orientation items during the neonatal assessment although not with quite as much consistency. Therefore, the infant who is highly repsonsive during the assessment is also highly responsive during the stimulation situation. Infant cuddliness during the stimulation situation related positively to infant cuddliness during the neonatal assessment and negatively to infant state, consolability, peak of excitement, rapidity of buildup, and activity, or items which cluster to form the Reactivity factor on the Brazelton scale. Infant state during the stimulation situation related positively to infant activity during the neonatal assessment. These data in combination with the previously mentioned findings support the notion of consistency in infant style across situations in both responsivity and state.

Table 4 presents the relationships among maternal and infant behaviors during the stimulation situation. One of the striking consistencies which should be noted is that the better the mothers' presentation of the stimuli, the better the infants' responses to them. For the presentation of each of the 5 stimuli (animate and inanimate auditory and visual), there are significant relationships between maternal and infant behaviors. There are also within domain consistencies in that an infant

who responds well to the inanimate auditory or visual stimulus also responds well to the animate auditory or visual stimulus. While the mothers' attempts to aid cuddling and use eye contact are negatively related to the cuddling behavior of the infant, maternal attempts to help cuddle her baby are consistently positively related to infant state. In general, the overall ratings of maternal sensitivity indicate that the more sensitive mothers, in terms of technique, and, to a lesser extent, persistence in presenting stimuli, have more responsive infants. This relationship between overall maternal sensitivity and infant responsiveness held for the infants' responses to the mothers' presentation of four out of the five stimuli.

Tables 5 and 6 present data concerning cross-situational consistencies in maternal and infant behaviors. Table 5 describes maternal behaviors during the feeding and stimulation situations. The most striking finding from this analysis is that mothers who were more attentive to their infants during feeding were also more sensitive in both their overall technique and persistence in presenting the stimuli during the stimulation situation. The more attentive mothers also presented four out of five of the individual stimuli (inanimate visual, animate visual, animate auditory, and animate visual and auditory) better. Obviously, the individual and overall ratings are not independent of each other. However, the cross-situational consistency in maternal behavior is noteworthy.

Table 6 presents the relationships among infant behaviors during the two mother-infant interaction situations. Several consistencies in infant behavior are apparent across situations. The infants' predomi-

nant state during feeding related positively to the infants' responsiveness following the presentation of four out of five of the stimuli presented during the stimulation situation. Since the highest predominant state during feeding was not usually crying behavior, this finding indicates that there is consistency in infant responsivity across situations. Two individual item consistencies in infant responsivity occurred across the two situations. The infants' response to the inanimate auditory stimulus during the stimulation situation related significantly to visual, auditory, and tactile responsivity during the feeding situation. Also, the infants' eye contact with the mothers during feeding related to the infants' responsiveness to the five stimuli presented during the stimulation situation. Again, this finding indicates that infants who were alert and responsive in one situation were also alert and responsive in the other situation. One other interesting finding is that cuddliness during the stimulation situation related negatively to infant state during feeding. Infants who were in higher states in one situation were also in higher states in other situations and, consequently, more difficult to cuddle.

Discussion

The findings from the present study provide information about patterns of interaction and consistencies in behaviors in the early mother-infant relationship. It is clear that styles of mother-child interaction are established very early in the developing relationship and that both the infant and the mother contribute to the patterning. The data also demonstrate that consistencies in infant and maternal style are evident from the very beginning of the life of the infant. The constan-

cy and predictability of these patterns remain important, but, as yet, unanswered issues. Some preliminary data based on the current sample, which may provide relevant information, will be available shortly from an ongoing short-term follow-up study.

A significant aspect of the results from the current investigation is that they replicate the findings from an earlier study (Osofsky & Danzger, 1974). Although the present study was not designed primarily to replicate earlier work, the fact that the same measures were used and that consistencies in behavior were found is potentially important. The observational assessment measures used in the current investigation have not had wide applicability since research concerning the early parent-infant relationship has only recently been initiated. The fact that stability has been demonstrated for the behaviors being measured provides support for both the consistency of the behaviors and validity of the measures.

Several of the positive and interesting relationships found between the perinatal variables and Brazelton Neonatal Assessment Scale should be mentioned. Length of labor seemed to contribute to the infants being more unstable at birth with less ability to console themselves. Other investigators (Kraemer, Korner & Thoman, 1972) have also reported that length of labor affects newborn behaviors. While this finding may be explained in several different ways, including the influence of constitutional factors, another explanation may be that the experience of a longer, more difficult labor exposed the newborn to increased trauma which could lead, at least temporarily, to increased lability.

One other positive relationship that should be noted is that between

the 5 minute Apgar score and the Reactivity factor on the Brazelton scale. Infants who scored higher right after birth on the Apgar were also more reactive at 2-3 days during the neonatal assessment. Since infants with higher Apgar scores are generally more alert and active, this finding indicates that there may be early consistency across these measures. It is also significant to note that a well established measure such as the Apger relates in a logical manner to a clustering of individual items forming a factor on this relatively new neonatal assessment measure.

An interesting issue brought to light from the findings of the present study is the question of individual and group differences during the newborn period, at least for the measures included in this investigation. Very few sex differences were found for the current sample which supports data from some earlier studies (Osofsky & Danzger, 1974; Horowitz, Note 2). However, other investigators, at least with slightly older infants, have reported consistent and significant sex differences (Moss, 1967; Lewis, 1972). This discrepancy leaves open to question whether sex differences occur with consistency in the neonatal period or whether they become more apparent at a later age. In several recent studies, it has been shown that parents and other adults react differently to male and female babies regardless of their individual characteristics (Ruben et al, 1974; Condry & Condry, Note 10; Will, Self & Datan, Note 11). Therefore, it is at least possible that although there are clear sex differences in behavior at later ages, these differences may be learned and not emerge consistently in the newborn period.

No significant effects of anaesthesia administered during labor

were found for the neonatal assessment items, which is contrary to data reported by other investigators (Barnett, 1971; Bowes, Brackbill, Conway & Steinschneider, 1970; Standley, Note 12). This discrepancy may be explained by the fact that, in general, low levels of anaesthesia were used for the current sample. However, it also highlights the need for more detailed assessments on these measures.

The lack of significant differences in interactive behaviors for mothers of children of different parity (birth order) may not be explained so easily. Although these findings are not consistent with those reported by Thoman et al (1970) and those based on more recent findings of Parke (Note 8), there may be several reasons for the discrepancy. The sample studied by Thoman et al (1970) was primarily white and middle class. Although portions of Parke's (Note 8) sample are similar to the current group, they may still be somewhat different from a group representing the clinic population of a large urban hospital. It may be that these mothers have had a relatively greater amount of experience with children and that, for this and other reasons, the birth order of the child has a less significant effect upon maternal behavior for the current sample.

In discussing the interactional data from the two observational situations and the neonatal assessment, it is clear that the overall pattern is one of consistency in infant and maternal styles. During the feeding situation and neonatal assessment, the more responsive infants consistently demonstrated such behaviors and had mothers who stimulated them to a greater extent. During the stimulation situation, and the neonatal assessment, the highly responsive infants consistently demonstrated such behaviors and had mothers whose presentation of the stimuli was bet-

ter. Finally, the cross-situational data also highlighted these consistencies. Mothers who were more attentive to their infants during feeding were also more sensitive in presenting the stimuli to them. Infants who were alert and responsive in one situation were also alert and responsive in the other situation. It should be mentioned that the methods used to evaluate mother-infant interaction in the present study may have contributed to these findings of consistencies in behavior. Many of the maternal and infant behaviors observed during the neonatal assessments and feeding and stimulation situations were similar; only the situations changed. Thus the method provided for independent assessments of similar behaviors in different situations.

Although the findings from the present study are based on correlational analyses, the independent assessment of infant style during the neonatal assessment provides additional information that may be consistent with tentative directional interpretations. For example, significant relationships were noted between infant responsivity during the neonatal assessment and infant state during the stimulation situation. Thus there was considerable consistency of infant behaviors across situations including situations with and without their mothers present and interacting with them. More highly responsive infants also had mothers who did a better job in presenting the stimuli to them. These mothers may have been more sensitive and may have affected their infants; however, considering the cross-situation consistency of infant behaviors, it is also likely that these mothers may have been affected in their presentation by their highly responsive infants who looked at them, listened to them and were generally more responsive. In other words, these more respon-

sive infants may have stimulated their mothers to be more sensitive.

Another area where several sets of data lend themselves to a directional interpretation is in infant molding and cuddling behavior and maternal attempts to hold and cuddle their infants. During the stimulation situation, the mothers' attempts to aid cuddling and use eye contact related negatively to their infants' cuddling behavior. Moreover, the higher the infants' state during several of the stimulus presentations, the more the effort that was necessary on the part of the mothers to aid cuddling. It is at least possible to reason that the mothers who had to assist their babies more to mold and cuddle had constitutionally, or at least behaviorally, less cuddly infants. The finding that infant cuddliness during the neonatal assessment related negatively to infant state and overall reactivity would lend support to such an interpretation. The additional finding that cuddliness during the stimulation situation related negatively to infant state during feeding would indicate that infants who were in higher states in one situation were probably in higher states in other situations and, consequently, more difficult to cuddle. Such infant behaviors would be likely to affect parental responses over time, just as parental responses might be expected to affect their behaviors.

On the basis of the data from the current study several important conclusions can be drawn. First, more research is necessary concerning individual and group patterns and differences in newborn behavior in order to gain a clear understanding of their effects on the developing interactive relationship. Second, consistent patterns of mother-infant interaction may develop from as early a period as the first few days of

life. More studies are needed to detetermine the long term stability and predictability of such patterns. Third, it would seem likely that infants affect parents just as parents affect infants from very early in life. Therefore it is necessary to understand the developing relationship as an interactive one and to study the individual contributions of each partner to the interaction and how these factors affect the other's behaviors. More theoretical and empirical work is needed to gain a better understanding of the directional components of early parent-infant interaction and the subsequent effects of these components. Further, if there is a natural change in the consistent patterning or if intervention seems desirable in order to optimize the relationship, it would be important to consider both the infants' and parents' contributions to the process.

Footnote

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Table 1

Distribution Statistics for Infant Behavior During the Stimulation Situation

Infant Behavior	$\bar{X}$	SD
Initial state	3.0145	0.0554
Inf. state (rattle)	3.1560	0.0589
Inf. R (rattle)	5.2231	0.1077
Inf. state (voice)	3.3910	0.0846
Inf. R (voice)	5.0566	0.1960
Inf. state (ball)	3.2353	0.0783
Inf. R (ball)	3.2095	0.2029
Inf. state (face)	3.2985	0.0807
Inf. R (face)	5.4216	0.1819
Inf. state (f. & v.)	3.4375	0.0991
Inf. R (f. & v.)	5.2716	0.1964
Inf. cuddliness	3.1628	0.0711

Table 2

Distribution Statistics for Maternal Behavior During the Stimulation Situation

Maternal Behavior	$\bar{X}$	SD
Mat. beh. (rattle)	4.3538	0.0707
Mat. beh. (voice)	3.8585	0.1149
Mat. beh. (ball)	2.8762	0.0992
Mat. beh. (face)	3.6078	0.0894
Mat. beh. (f. & v.)	3.4691	0.1041
Cuddliness I (mov't)	2.7321	0.0512
Cuddliness II (eye contact)	2.5000	0.0591
Cuddliness III (holding)	2.2923	0.0720
Sensitivity I (technique)	2.6800	0.0759
Sensitivity II (persistence)	2.6160	0.0707

Table 3

Relationships between Brazelton Variables and Infant Behavior during the Stimulation Situation

Brazelton Scale	Infant Behavior: In. St.	Inf. St. (R)	Inf. R (R)	Inf. St. (V)	Inf. R (V)	Inf. St. (B)	Inf. R (B)	Inf. St. (F)	Inf. R (F)	Inf. St. (F&V)	Inf. R (F&V)	Inf. Cuddlin
In. St.	.20					.16						
Pred. St. (A)		.16					.19					-.34*
Pred. St. (B)	.16	.19						.20				-.28*
Habituation												
Light							-.22					
Rattle						-.18		-.19				
Bell	-.16	-.23*		-.21						-.22		
Pinprick											-.26	
Orientation												
Ball			.28*						.29*			
Rattle			.28*		.19							
Face			.34*			-.16			.26*			
Voice			.24*		.30		.20	.24				
Face & Voice		-.17	.25*		-.19			.21			.25	
Alertn.			.26*						.29*		.25	
Tonus				.19		.21		.20		.29*		
Mot. Mat.										.18		
P-to-sit		.16										
Cuddlin.		-.16										.34*
Def. Mov't							.29*					
Consol.												-.19
P. Excite.												-.23*
Rap. Bldup												-.17
Irrit.												
Activ.	.18	.25*		.18		.20		.23*		.17		-.37*
Tremul.					.26*							
Startle									-.21			
Lab. St.												
Self-quiet.												
H-to-mouth						.21		-.18				

* $p < .01$

Table 4

Relationships between Infant and Maternal Behaviors during the Stimulation Situation

Infant Behavior	Maternal Behavior: Mat. B (F)	Mat. B (V)	Mat. B (B)	Mat. B (F)	Mat. B (F&V)	Cuddlin I (mov't)	Cuddlin II (eye cont)	Cuddlin III (aiding)	Sensitiv. I (techn.)	Sensitiv. II (persis.)
In. St.								.18		
Inf. St. (R)										
Inf. R (R)	.36*	.35*								
Inf. St. (V)							.22*			
Inf. R (V)	.22	.40*			.31*			.17	.27*	.17
Inf. St. (B)								.17		
Inf. R (B)			.34*	.26*		.20			.31*	
Inf. St. (F)						.22*		.26*		
Inf. R (F)			.29*	.49*					.19	
Inf. St. (F&V)										
Inf. R (F&V)		.21	.21	.32*	.40*				.23	.23
Inf. Cuddlin.							-.19	-.22*		

* $p < .01$

Table 5

Relationships between Maternal Behaviors during the Feeding and Stimulation Situations

Stimulation Situation	Feeding Situation: Attentiveness	Auditory (freq.)	Visual	Auditory (qual.)	Visual movement	Tactile (qual.)	Nonfunc. Handl. (qual.)	Funct. Handl. (quant.)
Mat. beh. (R)								
Mat. beh. (V)	.30*							
Mat. beh. (B)	.25*						.19	
Mat. beh. (F)	.20							.25*
Mat. beh. (F & V)	.24							
Cuddlin. I (mov't)								
Cuddlin. II (eye cont.)								-.18
Cuddlin. III (aiding)								
Sensitiv. I (techn.)	.26*				.21			
Sensitiv. II (persis.)	.18							

*p < .01

Table 6

Relationships between Infant Behaviors during the Feeding and Stimulation Situations

	Feeding Situation						
Stimulation sit.	In. St.	Pred. St.	Eye Cont.	Auditory R	R to holding	Tactile R (Func. & Nonfunc. Handl.)	Overall Tactile R
In. State					-.18		.18
Inf. St. (R)							.20
Inf. R (R)	.18	.23*	.20	.19	.17		
Inf. St. (V)		.25*					
Inf. R (V)		.31*	.20				-.43*
Inf. St. (B)		.23			-.22*		
Inf. R (B)			.21				
Inf. St. (F)					.25		
Inf. R (F)		.27*	.20				
Inf. St. (F & V)							
Inf. R (F & V)		.28*	.24				
Inf. Cuddlin.	-.20	-.25*					

*p < .01